On Single-Distance Graphs in $\mathbb{R}^n$ but Not $\mathbb{Z}^n$

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Let $S \subseteq \mathbb{R}^n$. Define a graph G to be a *single-distance graph* in S if G can be drawn with its vertices being points of S and its edges being line segments, each of the same length. A problem (posed at this very conference!) asks for the minimum chromatic number among all graphs G which are single-distance graphs in $\mathbb{R}^n$ but are not single-distance graphs in the integer lattice $\mathbb{Z}^n$. In this talk, we will answer this question for $n = 2$ and give bounds on the answer for larger n.

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